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Please add the following claims for consideration by the Examiner:

--- ~~12~~⁹ The rechargeable battery of claim 1, wherein each collector plate is substantially C-shaped.

AS ~~13~~¹⁰ The rechargeable battery of claim 1, wherein each collector plate has a substantially flat middle portion and opposed edge portions that are substantially orthogonal to the flat lower portion.

~~14~~¹¹ The rechargeable battery of claim 1, wherein the plurality of positive and negative electrode plates each extend in a respective plane substantially in parallel to a plane of each of the long lateral walls.---

REMARKS

In the above-noted Official Action, the Examiner made Final the Restriction Requirement set forth November 27, 2001. The Examiner objected to the specification at page 15, lines 7-13 for an informality. Claim 6 was rejected under 35 U.S.C. §112, second paragraph as indefinite. Claims 1-8 were rejected under 35 U.S.C. §102(b) over EDWARDS et al. (U.S. Patent No. 4,603,093). Claims 1-3, 7 and 8 were rejected under 35 U.S.C. §102(b) over HIROKOU et al. (U.S. Patent No. 5,871,861). Claims 1 and 9 were rejected under 35 U.S.C. §103(a) over EDWARDS in view of DOUGHERTY et al. (U.S. Patent No. 4,029,855).

Upon entry of the present amendment, claims 1, 3, 4, and 6 will have been amended, claim 2 will have been canceled, and claims 12-14 will have been added for consideration by the Examiner. In view of the herein-contained amendments and remarks, Applicants respectfully request reconsideration and withdrawal of each of the outstanding rejections, as well as an indication of the allowability of all the claims in the present application, in due course.

Applicants have amended the specification at page 15 to correct an informality. In particular, Applicants have replaced the term “during” with a “.” to indicate the end of a sentence. Applicants have also capitalized the first character of the term “the” to indicate the beginning of the next sentence. Accordingly, Applicants respectfully submit that the amended sentences are grammatically correct and request reconsideration and withdrawal of the objection to the specification.

Applicants have amended claim 6 to delete the word “the” from the term “the distal ends”. Accordingly, Applicants submit that claim 6 is definite under 35 U.S.C. §112, second paragraph. In view of the above-noted amendment to claim 6, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 6 under 35 U.S.C. §112, second paragraph.

Applicants respectfully traverse the rejection of the claims under 35 U.S.C. §102(b) and §103(a). In particular, claim 1 of the present invention recites “electrode plates arranged

alternately and substantially in parallel to the long lateral walls of the cell case”. In contrast, electrodes 28 and 30 of EDWARDS are arranged perpendicular to the long lateral walls.

In addition, Applicants submit that EDWARDS discloses a storage battery that includes horizontally stacked electrode plates. Applicants submit that such an arrangement is likely to lead to non-uniform distribution of electrolyte, thereby leading to deterioration of the battery characteristics such as power output or battery capacity. In contrast, by placing the electrode plates in parallel to the long lateral walls of the cell case, the rechargeable battery of the present invention is free from the problem of EDWARDS caused by non-uniform distribution of electrolyte.

Applicants have also amended claim 1 to recite “the lateral edges of respective lead portions of the positive electrode plates and the negative electrode plates are attached to the collector plates”. Applicants respectfully submit that HIROKOU fails to disclose lead portions of the electrode plates that are attached to the collector plates.

As a matter of record, Applicants also submit that the term “lead portions” should be considered in view of, for example, elements 18a and 19a of Figure 5, insofar as the term “lead” is not meant to convey an elemental or molecular property.

Rather, HIROKOU discloses a secondary cell in which lugs 11 and 12 of the electrode plates 20, 21 are bound and sandwiched between a pair of metal pieces 42, 43. As a result of the construction of the secondary cell in HIROKOU, current may concentrate in portions

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that are sandwiched between the metal pieces, resulting in increased heat generation and shortened service life of the battery. In contrast, the connecting structure of the lead portions of the electrode plates and the collector plates of the present invention avoids the problems presented by the secondary cell in HIROKOU. Accordingly, Applicants submit that claim 1 is patentable over HIROKOU, at least for the reasons noted above.

In addition, Applicants respectfully submit that each of claims 3-14 are patentable over the prior art, at least for the reasons noted above with respect to claim 1 from which each depends directly or indirectly, as well as for independent reasons related to their own patentability.

Applicants have added claims 12-14 for consideration by the Examiner. Applicants submit that claims 12-14 do not add new matter to the specification. The subject matter recited in claims 12-13 is disclosed at, for example, page 15, lines 7 -10 and Figure 5. Furthermore, the subject matter recited in claim 14 is disclosed at, for example, Figure 5, which is a cross sectional view of the top of the electrode plate group shown in Figure 4. Accordingly, Applicants respectfully request entry of claims 12-14, as well as an indication of their allowability in due course.

Thus, Applicants submit that a clear basis exists for a finding of patentability of the pending claims included in the present amendment. An action to such effect is respectfully requested.

SUMMARY AND CONCLUSION

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so. Applicants have amended the claims so as to improve the form thereof and added claims to recite additional features of the invention.

Applicants have discussed the disclosure of the references relied upon by the Examiner and have pointed out specific features of the claims not disclosed by the references. Applicants have further discussed the features recited in Applicants' claims and have pointed out how these features are not taught, disclosed nor rendered obvious by the disclosure of the reference cited by the Examiner

Accordingly, Applicants have provided a clear evidentiary basis supporting the patentability of all the claims in the present application and respectfully request an indication to such effect, in due course.

Any new claims and amendments to existing claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

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Should the Examiner have any questions or comments regarding this Response, or the present application, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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MARKED-UP COPY OF CHANGES TO THE SPECIFICATION

Please amend the paragraph beginning at page 14, line 13 and ending at page 15, line 15, as follows:

The aforementioned electrode plate groups 5 are explained in detail with reference to Figs. 4 to 7. In Figs. 4 and 5, a plurality of positive electrode plates 18 and negative electrode plates 19 are arranged alternately, and the positive electrode plates 18 are covered with separators 20 in the form of a bag having an opening on one side. The positive plates 18 and the negative plates 19 are stacked upon one another with separators 20 therebetween, thereby constituting the electrode plate group 5. In Fig. 4, the region where the positive electrode plates 18 and the negative electrode plates 19 oppose each other with the intervening separators 20 and generate electric power is indicated by oblique lines. The lateral edges of the group of positive electrode plates 18 protrude beyond the group of negative electrode plates 19 on one side, and the lateral edges of the group of negative electrode plates 19 protrude beyond the group of positive electrode plates 18 on the opposite side, and these protruding lateral portions form the lead portions 18a and 19a, to the lateral ends of which collector plates 21 and 22 are welded, respectively. The outer edges of the collector plates 21 and 22 are bent toward the inside as shown in Fig. 5, in order to restrict the dimensions of the electrode plates 18, 19. [during the] The collector plates 21, 22 are welded to the electrode plates 18, 19, so that the electrode plates 18, 19 do not spread

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outwards as pressure is applied thereto. Numeral 23 denotes external separators arranged at the outer faces of the electrode plate group 5 between the collector plates 21 and 22.

MARKED-UP COPY OF THE AMENDED CLAIMS

1. (Amended) A rechargeable battery, comprising:

a prismatic cell case having short lateral walls and long lateral walls; [and]

a group of electrodes accommodated inside the cell case, the group of electrodes including a plurality of positive and negative electrode plates arranged alternately and substantially in parallel to the long lateral walls of the cell case with an intervening separator therebetween; and

a plurality of collector plates, wherein lateral edges of respective lead portions of the positive electrode plates and the negative electrode plates are attached to the collector plates, whereby the group of electrodes is held by the collector plates;

wherein said lateral edges of the positive electrode plates protrude beyond the negative electrode plates on one side, and said lateral edges of the negative electrode plates protrude beyond the group of positive electrode plates on the opposite side, the protruding portions forming the lead portions.

3. (Amended) The rechargeable battery of Claim [2] 1, wherein the collector plates are provided with curved portions at both ends thereof for clamping the group of electrodes.

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4. (Amended) The rechargeable battery of Claim [2] 1, wherein:

a plurality of cell cases are coupled together as one piece with the short lateral walls of the cell cases being mutually integrated, thereby constituting an integral battery case;

upper open ends of the cell cases are closed by an integral lid member; and

the collector plates in adjacent cell cases are connected to each other via a connection fitting that extends through the short lateral walls between the adjacent cell cases.

6. (Amended) The rechargeable battery of Claim 4, wherein

through holes are formed in the short lateral walls between two adjacent cell cases;
and

the connection fitting comprises a pair of frame fittings, each frame fitting having a base end and a protruding portion that is inserted into the through holes, [the] distal ends of the protruding portions being welded together, and the collector plates being attached to the base end of the frame fittings.